METHODOLOGY AND ANALYSIS, ORGANIZATION AND CONDUCT OF PEDAGOGICAL EXPERIMENTAL PROCESSES

Firyuza Orazovna Orazova
Chirchik State Pedagogical University

Abstract

The purpose of organizing the pedagogical trial test is to increase the level of knowledge of students, to achieve the quality and efficiency of education by providing the pedagogical conditions for the organization of innovative schools. In this article, the method of conducting necessary pedagogical experiments for the quality of education to achieve high results is highlighted.

Keywords: innovation, experiment, educational technology, questionnaire, social system, portfolio technology, design method, modern innovations, motivation, the knowledge quality of performance, diagnose.

Introduction

Reforms in the organization of innovative educational institutions implemented in our republic in recent years are gaining importance in our position among the highly developed countries of the world. Innovations in education are important as they serve to coordinate changing demands during the historical development of society. However, the social motives that cause innovative processes in this system have changed significantly in our time, which has led to the development of innovations that affect the foundations of education as a special social institution.

With the development of independent states, changes in the material and spiritual life of the society, the exchange of worldviews and the reformation of the education system, there is a need to introduce a new type of teaching personnel who can work independently into the field of science. No. PF-4947 of the Republic of Uzbekistan dated February 7, 2017 "On the strategy of actions" for further development of the Republic of Uzbekistan, "Public education of the Republic of Uzbekistan" dated April 29, 2019 Decree No. PF-5712 "on approving the concept of system development until 2030". Resolution No. PQ-3907 of August 14, 2018 "On the measures to raise the moral, moral and physical maturity of young people, to raise the quality of their education system to a new level" and serves in the implementation of tasks specified in other regulatory legal documents related to this activity

It is emphasized that one of the main factors ensuring sustainable development in the world is education. Practical methodological approaches and measures are being implemented to eliminate problems in improving the quality and efficiency of general secondary education. Such approaches include attempts to organize a developmental educational environment in innovative schools (electronic and digital educational environment), introduction of new

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educational and scientific resources, development of practical and professional training of graduates, and such processes and rules. One of the important factors is the creation of an educational environment that sustainably develops general secondary education. In particular, it requires the need to provide pedagogical conditions for the organization of a developmental educational environment in general education schools, to improve modeling, pedagogical technologies and assessment criteria.

Methods

The set of modern educational technologies, methods and tools for ensuring pedagogical conditions for the organization of a developing educational environment in an innovative school consists of the following:

a) development of positive motivation for innovation (pedagogical conditions);

b) development of a unified information-educational environment of general secondary education;

c) innovative educational technologies include: problem-based learning technology, collective learning method technology, modular and integrative learning technology, game technologies, portfolio technology;

d) main methods: design method, case-study method.

It is characterized by an active attitude to the presented set of innovative educational technologies, methods and tools, the need to implement activities in a competitive environment, to form a clustered environment of independent and team work.

In the pedagogical experiment-test work:

• game technologies;

• collective teaching technologies;

• problematic educational technologies;

• design method;

• modular educational technologies;

• integrative educational technologies;

• case-study method;

• cluster method;

• the portfolio method was used.

Pedagogical experimental work was carried out from 2020 to 2023 in the innovative school of Dangara district of Fergana region:

In the 2020-2021 academic year, pedagogical support for the development of positive motivation to study was implemented in innovative schools on the topic "Development of positive motivation of students to study";

In the 2021-2022 academic year, a pedagogical experiment-test was organized on the use of innovative educational technologies and methods that increase the quality and efficiency of education by providing pedagogical conditions in innovative schools based on the technology of creating a developing educational environment. and held;

In the 2022-2023 academic year, as a result of providing the pedagogical conditions for the establishment of innovative schools, the levels of knowledge acquired by students were determined, pedagogical experiments were organized and conducted.

A positive motivation to study is the motivation to achieve a positive result of the activity carried out in accordance with the social values of the individual, the team and the society as a whole. The development of positive motivation is a process that helps to turn the motives of students into a motivational field with the predominance of motives that describe the content of positive motivation to study. The definition of its content components reveals the specific features of the concept of "positive learning motivation".

The ability to set goals or the ability to set goals in the learning process is also an important component of the content of positive motivation to study. The ability to achieve one's educational goals in the educational process, to set goals independently, taking into account one's capabilities, and to set socially significant goals, taking responsibility for the set goal. can be

As a component of the content of positive motivation to study in the educational process, it can be manifested as activity, willingness to consciously perform tasks such as independence in the use of acquired knowledge, skills, and aspiration for independence.

The technology of organizing a developing educational environment, methods of modernizing pedagogical interaction in the process of pedagogical support for the development of positive motivation to study in students by providing pedagogical conditions for the organization of innovative schools, innovative educational technologies and methods are effective.

As a means of developing positive motivation to study, the set of methodological tools and methods for teaching students of innovative schools using innovative educational technologies is divided into four blocks

Block I. The weekly special course is designed for training, and its purpose is:

• development of thinking skills (analysis, generalization, development of tools and methods that increase activity efficiency, etc.);

• personal development (self-respect, self-esteem, reflexive ability, self-awareness);

• development of communication skills (ability to establish constructive interaction with others, etc.);

• development of positive motivation for learning.

Block II. The calendar for general education subjects foresees weeks, which helps to increase the effectiveness of developing a positive motivation to study. When preparing for such events, they will have the ability to move the flow of information, determine the most important, choose questions that interest them on the topic, and create questions. Theme weeks are held once every three months.

Block III. It is held among active participants in scientific circles. Assignments are developed by methodical associations of the educational institution. The main requirement is the student's ability to creatively use the existing stock of knowledge.

The next tool included in the complex of methods and tools for developing the knowledge of innovative schoolchildren using innovative educational technologies is a single information-educational environment of a professional educational institution of three different directions:

1) Formation of the material and technical base of information;

2) Creating electronic publications for educational purposes;

3) Pedagogical staff readiness and students' use of information and communication technologies.

Pedagogical experimental work was carried out in three stages:

Phase I (2020-2021) - defining;

Phase II (2021-2022) - formative;

III stage (2022-2023) - controller.

A questionnaire was developed to determine the level of use of information and communication technologies (ICT) in the educational process of the innovative school in order to study the changes for the implementation of the identifying and controlling stages of the pedagogical experimental work. Calendar blocks of the questionnaire correspond to selected areas of development of a unified information-educational environment of professional education.

The following approaches were used as a basis for developing the questionnaire:

1. Invariance with respect to the exact content of the questions.

2. Invariance of the questions in relation to the professional functions performed by the respondents.

3. The presence of a combination of questions in one questionnaire with one or more answer options.

4. Strict linear connection of logical questions with the selected answer to the previous one in the form of a presentation.

5. To ensure the simplicity and accuracy of the presentation of question-answer options and the actions of respondents when filling out questionnaires.

The formative stage of pedagogical experiment-trial work includes a number of systematic measures for the development of a unified information educational environment in innovative schools, to develop mobility, improve information exchange and find effective solutions among subjects of the educational sector. based on the use of the method of intersectoral cooperation.

The effectiveness of the organization of activities for the development of a single information-educational environment, confirmed by the dynamics of changes in the main areas mentioned above, was achieved through a single methodological and technological platform for the management of the information-educational environment, the organization of the software and hardware part of the information environment , including scientific and methodological filling of its information resources; organizing the professional activities of students and teachers. The information-educational environment that combines software and technical tools with the help of network technologies makes it possible to consider the professional education system not only as an information space, but also as a set of information-educational resources.

The results of the survey showed that by the time of the control phase of the pedagogical experiment, almost all innovative schools have technical teaching tools, including computers: 92.6% of innovative educational institutions conduct classes using computer equipment. , 90.5% use multimedia projectors, 82.1% use video lessons in innovative schools. At the same time, about 30% of institutions use outdated equipment.

In general, the state of technical equipment of innovative schools is at a high level. During the experimental work, there was a constant increase in the provision of personal computers to educational institutions.

The assessment of the rate of equipping educational institutions with computers is of particular importance, and the proportion of their direct use in the educational process is considered. The percentage of computers installed in ordinary classrooms, rather than in specialized computer classes, is gradually increasing, which is connected with the end-to-end computerization of the educational process, the use of computer equipment in "ordinary classes".

The necessary and sufficient technological base was created for the wide use of information and communication technologies in all aspects of the activity of educational institutions through the control stage of experimental work on the development of a single information-educational environment of the innovative school as a means of developing the preparation of graduates of the innovative school for additional professions.

According to the analysis of the results of the survey, the use of electronic publications for educational purposes is described as follows:

• 45% of educational institutions used electronic textbooks in the implementation of general vocational training programs, and 20% of the total time using them. 75% of innovative schools use educational and testing programs;

• in the implementation of general secondary education programs (special subjects) in 32 institutions of professional education (30%) electronic textbooks are used and about 40% of the study time is allocated to them;

• all innovative schools use electronic materials for educational purposes in the implementation of professional training and practice programs for students.

Of the total number of respondents, 43% of teachers use the information resources of the professional education portal, and 26% do not use the resources provided for them in their educational activities. More than half of the respondents (62%) who used the resources of the professional education portal positively evaluated the relevance and quality of the information provided on them.

The distribution of computer technologies and teaching tools among subjects in innovative schools is presented as follows: in most computer classes and computers, mostly only in the study of informatics (100%), and in the study of other subjects specified in the curriculum - 1, 5-2 is rarely used. For example, 68.8% of innovative schools conduct mathematics classes with the help of computer tools and technologies, and 86.5% of special subjects.

If at the beginning of the experiment natural sciences were actually taught without the use of information technologies, it changed dramatically at the end, which indicates that methodological work was carried out to inform the process of teaching general education subjects. If we consider the ratio between the types of lessons held in computer classes, the largest part of the study time (50%) is devoted to laboratory work, and practical and group exercises are 30%, respectively. and makes up 25%. The workload of computer classes is very intense (on average 6-8 hours per day). In the calculation of this load, the time of using computer classes both during training sessions and outside of school hours was taken into account. In extracurricular hours, computer classes are used for independent work, as well as

for open use of information resources of the educational institution. Analyzing the third direction of the development of a unified information-educational environment of vocational education as a means of developing professional readiness of innovative schoolchildren using innovative educational technologies, it should be noted that with the rapidly growing flow of information, modern information society not only the technical base of computer technologies, the availability and quality of electronic publications for educational purposes, but also the users themselves: teaching staff and students.

One of the most important tasks of developing the professional preparation of innovative school graduates on the basis of innovative educational technologies is the formation of the specialist's information culture, and the level of its formation is determined by the following:

• first, knowledge about information processes, models and technologies;

• secondly, skills and competencies of using tools and methods, processing and analyzing information in various activities;

• thirdly, to be able to use modern information technologies in professional activities;

• fourthly, the formation of a worldview as an information system.

During the control phase of the conducted pedagogical experiment-test, it was shown that students' attitude towards information technologies and Internet programs is positive: more than 72% of students use information technologies and Internet applications; on average, 88% use information technologies on a daily basis. More than 76% of students use Internet applications, more than 67% use e-textbooks, more than 28% use distance learning courses, and more than 51% use Internet resources for posting educational and methodological developments. .

The results of the survey showed that 10% of students are not at all familiar with computers and information technologies; about 40% of them have satisfactory computer skills and 30% have good knowledge. About 20% of students regularly use computers in their professional activities, and 10% of students use them for gaming. In general, experimental work on the development of a single cluster educational environment as a means of developing the knowledge of students of innovative schools using innovative educational technologies made it possible to achieve the following results:

a) innovative schools have created their own websites;

b) the number of electronic textbooks increased 8 times;

c) the number of educational and test programs used in the educational process increased by 3 times;

d) the activity of applying to search systems by students and teaching staff has increased by 4 times;

e) availability of personal computers has increased by 5 times, and in the educational process by 7 times.

According to the results of the research, the activation of the centralized system for the development of information and communication technologies in innovative schools and the study of the dynamics of this process continued.

Innovative educational technologies and methods of developing professional readiness and knowledge of innovative school graduates include: problem-based learning technology,

collective learning technology, modular and integrative learning technology, game technologies, portfolio technology, design method, case -stadi, cluster method.

In the initial stages of experimental work, pedagogical experimental work was organized and conducted in order to test the effectiveness of using innovative educational technologies and methods in the development of professional training and knowledge of graduates.

Pedagogical experience-testing includes two stages: Stage I: Organization of activities for methodical support, introduction and development of modern, highly effective innovative educational technologies and advanced pedagogical technologies for the educational process reach; preparation of scientific and methodological recommendations on the introduction of innovative educational technologies and advanced pedagogical technologies; testing of innovative educational technologies and advanced pedagogical technologies in the process of innovative school education; development of a set of diagnostic methods and control-measurement materials.

Stage II: Implementation and diagnosis of innovative educational technologies and advanced pedagogical methods in the educational process of innovative schools

The following participants took part in the experience of introducing innovative educational technologies and advanced pedagogical technologies into the educational process:

Innovative school students and teaching staff;

57 teachers, including 30 teachers of general education subjects, 24 teachers of special subjects, 3 masters (masters of industrial education); about 1000 students.

The results of the analysis showed that problem creative groups of teachers were organized in educational institutions for the development of innovative educational technologies and advanced pedagogical technologies.

Ensuring the effective implementation of innovative educational technologies in the educational process included four stages:

1. Diagnosis;
2. Projecting;
3. Organizational-functional;
4. Reflexive-analytical.

At the diagnostic stage:

• studying (analyzing) the needs, interests, and capabilities of students and teaching staff;

• study (analysis) of available resources for testing (implementing) innovative educational technology, methodology;

• to determine the initial level of mental and personal development of students;

• to determine the effectiveness of the used methods, forms of organization of educational activities. At the design stage: • tasks on advancing the pedagogical goal, testing (implementing) the technology; • determination of sufficient pedagogical conditions for given pedagogical goals and tasks;

• to identify functional and effective ways of testing innovative educational technology and methodology; • planning the actions of pedagogical staff;

• selection of educational material by technology, methods. At the organizational-functional stage:

• formation of students' motivation for professional activity on the development of pedagogical technology and methodology; • assimilation and adaptation of educational material to the level of students' theoretical and practical preparation, age and personal characteristics, life experience;

• organization of joint activities of students and teaching staff with the help of various forms and methods, methods, tools;

• encourage the development of positive motivation for learning and activity of students. In the reflexive-analytical stage:

• controlling the results of the educational process on the approval (implementation) of innovative educational technology, methodology;

• analysis and assessment of the obtained results from the point of view of compatibility with pedagogical conditions;

• identifying the causes of deficiencies and defects in the approval (implementation) of innovative educational technology and methodology;

• to determine directions for correction and professional improvement of pedagogic staff regarding the introduction of innovative educational technologies.

During the second stage of the pedagogical experiment, group and individual consultations were held every month in the form of real mutual and remote mode. An additional professional training program of "Innovative educational technologies of teaching" training courses, built on the basis of the modular principle, was implemented.

The results of the introduction of innovative educational technologies and advanced pedagogical methods into the educational process with the help of developed diagnostic methods and a complex of control and measurement materials were determined at the beginning and at the end of the second stage of the pedagogical experiment. The analysis of the results of the input diagnostics made it possible to determine the reasons for the selection of innovative educational technologies and pedagogical technologies by the leaders and teachers for their application in the educational process. They noted the desire to stimulate the creative activity of respondents, to develop them, to better master new material, to be responsible and competitive in their future professional activities. According to the respondents, innovative educational technologies increase the efficiency of the educational process, develop students' thinking ability, have a flexible system of control and self-control. The results of self-assessment of innovative school teachers' willingness to use innovative educational technologies are presented as follows: 82% of respondents understood well the theoretical foundations of the selected technology (methodology); 76% of respondents used some elements of technology (methodology); 34% of respondents used the technology (methodology) in practice; almost every respondent (95%) has experience using the selected technology (methodology) in educational institutions.

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